

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-13. (canceled)

14. (currently amended) A magnetic resonance imaging apparatus comprising:
a static magnetic field generating unit ~~for generating~~ that generates a homogeneous static magnetic field in an inspection space;
a gradient magnetic field generating unit ~~for generating~~ that generates a magnetic field strength gradient;
a high frequency magnetic field generating unit;
a detecting unit ~~for detecting~~ that detects nuclear magnetic resonance signals generated from an object to be examined;
a display unit ~~for displaying~~ that displays an image as a result based on the detection;
a temperature detecting unit ~~for detecting~~ that detects a temperature of said static magnetic field generating unit and/or surroundings thereof;
a magnetic field correcting unit ~~for generating~~ that generates an additional magnetic field ~~for correcting~~ that corrects non-uniformity of distribution of said static magnetic field within said inspection space being caused by temperature change of said static magnetic field generating unit and/or surrounding space of it; and
a control unit ~~for controlling~~ that controls said magnetic field correcting unit based on the temperature detected by said temperature detecting unit.

15. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

16. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the temperature detecting unit detects temperatures of at least two positions.

*D1
Cont'd*

17. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

18. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

19. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

20. (previously presented) A magnetic resonance imaging apparatus according to claim 14,

wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

21. (currently amended) A method for maintaining uniformity of a static magnetic field generated by a static magnetic field generating unit in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of non-uniformity of distribution of the static magnetic field in an inspection space for an object to be examined, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof; and

*D
cont'd*

detecting a temperature of the static magnetic field generating unit and/or surroundings thereof; and

generating the additional magnetic field having a magnetic field distribution ~~for correcting that corrects~~ said nonuniformity of distribution of the static magnetic field within said inspection space based on the detected temperature.

22. (currently amended) A magnetic resonance imaging apparatus comprising: a static magnetic field generating means ~~for generating that generates~~ a homogeneous static magnetic field in an inspection space; and

a[n] uniformity correcting means ~~for detecting that detects~~ temperature change affecting the uniformity of distribution of the static magnetic field generated by the static magnetic field generating means and ~~for generating that generates~~ an additional static magnetic field ~~for canceling that cancels~~ non-uniformity of distribution of the static magnetic field within said inspection space based on the detected temperature change.

23. (currently amended) A magnetic resonance imaging apparatus comprising: a static magnetic field generating unit ~~for generating that generates~~ a static magnetic field of a predetermined intensity, said static magnetic field generating unit comprising a pair of superconducting coils and a pair of cryostats each accommodating one of said pair of superconducting coils;

a supporting means ~~for supporting that supports~~ said pair of cryostats as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating unit ~~for generating that generates~~ a magnetic field having an intensity gradient;

means ~~for generating that generates~~ a high frequency magnetic field;

means ~~for detecting that detects~~ nuclear magnetic resonance signals generated from said object;

means ~~for processing that processes~~ said nuclear magnetic resonance signals and ~~for displaying that displays~~ the processed results;

a temperature detecting unit ~~for detecting that detects~~ a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit ~~for generating that generates~~ an additional magnetic field ~~for correcting that corrects~~ non-uniformity of distribution of said static magnetic field within said inspection space being caused by temperature change of said static

magnetic field generating unit and/or surrounding space of it; and
a control unit ~~for controlling that controls~~ said magnetic field correction unit
based on the temperature detected by said temperature detecting unit.

*D1
Confidential*

24. (previously presented) A magnetic resonance imaging apparatus according to
claim 23,

wherein the control unit has a temperature setting unit that sets a temperature
detected by the temperature-detecting un it.

25. (previously presented) A magnetic resonance imaging apparatus according to
claim 23,

wherein the temperature detecting unit detects temperatures of at least two
positions.

26. (previously presented) A magnetic resonance imaging apparatus according to
claim 23,

wherein the magnetic field correcting unit comprises a shim coil for
generating an additional magnetic field and a shim power source that supplies a current to the
shim coil.

27. (previously presented) A magnetic resonance imaging apparatus according to
claim 23,

wherein the control unit comprises a voltage generating unit that generates a
voltage corresponding to a non-uniformity component of the magnetic field at the
temperature detected by the temperature detecting unit, a voltage/current converter that
converts the voltage output by the voltage generating unit to current, and a supplying unit that
supplies to the magnetic field correcting unit the current generated from the voltage/current
converter.

28. (previously presented) A magnetic resonance imaging apparatus according to
claim 23,

wherein the magnetic field correcting unit generates at least one additional
magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the
direction of the static magnetic field and y is one direction orthogonal to z.

*DI
cont'd*

29. (previously presented) A magnetic resonance imaging apparatus according to claim 23,

wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

30. (currently amended) A magnetic resonance imaging apparatus comprising:
a static magnetic field generating unit ~~for generating~~ that generates a static magnetic field of a predetermined intensity, said static magnetic field generating unit including a pair of superconducting coils;

a supporting means ~~for supporting~~ that supports said pair of superconducting coils as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating means ~~for generating~~ that generates a magnetic field having an intensity gradient;

means ~~for generating~~ that generates a high frequency magnetic field;

means ~~for detecting~~ that detects nuclear magnetic resonance signals generated from said object;

means ~~for processing~~ that processes said nuclear magnetic resonance signals and ~~for displaying~~ that displays the processed results;

a temperature detecting unit ~~for detecting~~ that detects a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit ~~for generating~~ that generates an additional magnetic field for correcting non-uniformity of distribution of said static magnetic field within said inspection space being caused by deformation of said supporting means due to the temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit ~~for controlling~~ that controls said magnetic field correction unit based on the temperature detected by said temperature detecting unit.

31. (currently amended) A magnetic resonance imaging apparatus according to any one of claims 14, 23 and 30,

wherein said apparatus further comprises means ~~for calculating~~ that calculates a temperature dependence of non-uniformity of distribution of the static magnetic field in the inspection space, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof;

*D'
end*

means for holding that holds a control data for correcting that corrects the non-uniformity of distribution of the static magnetic field corresponding to the temperature; and
means for outputting that outputs the control data being selected from said control data holding means based on the detected temperature into said control unit.
